# TEACHING MATHEMATICS: FACILITATOR'S GUIDE

## NUMERACY - MODULE 1



Name: _____

# **Numeracy** - Module 1

Teaching Mathematics in standards 1-4.

Facilitators' Guide

Malawi Institute of Education

# Acknowledgements

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(the main contractor) through Research Triangle Institute (RTI) and Seward Incorporated (sub-contractors).
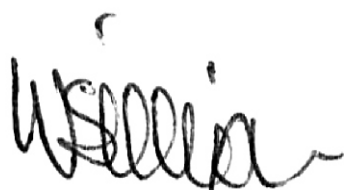
# *Foreword*

The Ministry of Education, Science and Technology introduced the Primary Curriculum Assessment and Reform (PCAR) in all primary schools in Malawi in 2007. PCAR follows an Outcomes-Based Education (OBE) approach and has great potential for improving the quality of education in the country. The OBE approach emphasises learner-centred or participatory methods and continuous assessment. In this way, it ensures that every learner is given the attention he/she deserves in order to attain the learning outcomes.

However, the implementation and management of the reform in schools has not been without challenges since some of the elements of the reform demand that teachers develop new skills and ways of operating in order to successfully cope with the innovations in OBE. Although teachers and school managers were oriented to PCAR in general and OBE in particular, the orientation was not sufficient due to time and resource constraints. A one-off week-long orientation session to PCAR was not sufficient for teachers to be helped on how to overcome the challenges that they encounter during the implementation of the curriculum. This is partly because new challenges keep cropping-up all the time in the classroom or school. In the face of reform, teachers need support all the time until they attain full mastery of the requisite skills. Continuing Professional Development (CPD) support for teachers is known to be the *sine qua non* in improving the quality of teaching and learning in the classroom. CPD can best be provided in the zone, cluster and within the school itself.

In an effort to support the development of teachers, the United States Agency for International Development (USAID), through the Malawi Teacher Professional Development Support (MTPDS) programme is establishing a system for providing CPD that can be conducted in schools and clusters. MTPDS worked with curriculum specialists from Malawi Institute of Education and other education professionals from various institutions to identify the specific needs of school managers and classroom teachers for Standards 1-4, with a special focus on Literacy, Numeracy, Life Skills and Leadership. In order to address the needs, training modules were developed in the four areas. These modules will be used to train Primary Education Advisors, Key teachers, head teachers and CPD mentors. The head teachers and CPD mentors will, in turn, use the materials to support teachers' professional development in their schools.

I sincerely hope that the school heads, CPD mentors and teachers will find the modules useful in addressing their needs to ensure that PCAR and OBE are successfully implemented and contribute to an improvement in the quality of teaching and learning as well as learner achievement in our schools.

Dr William Susuwele-Banda
DIRECTOR- Malawi Institute of Education

**Introduction**

This module draws teachers' attention to ideas and activities that would help learners, in the lower classes, enjoy learning mathematics as they get introduced to numbers, basic mathematical facts and simple problem solving. The design of the module encourages sharing of ideas and experiences among teachers on how to help learners enjoy and understand basic ideas in mathematics. The ultimate goal is to give learners a strong foundation in mathematics.

It is important to mention the fact that the selected ideas and activities in this module are meant to act as eye openers to teachers but not to serve as the only ideas or activities to be used when teaching the named content. Teachers are, therefore, expected to create more of such ideas and activities as they design their instructional activities for their classes.

Teachers are advised to take note of ideas and activities considered helpful as they go through this module. Such ideas must be recorded in the spaces provided within their modules. Keeping a record of ideas gained during training will make this module serve the purpose of helping teachers keep track of their professional growth in mathematics teaching.

Facilitators need to carefully prepare before training starts. This needs to be done about two days before training  begins to allow for time to reflect on how best to present the work in this module within allocated time for the activities in each unit.  Reading in advance will help facilitators to spot areas that need more time and those which need less time. If more time has to be made available, facilitators can come up with strategies that can help them cover the work in less time but without compromising the output of training. Such thoughtfulness cannot be done the night before training. Hence, all facilitators are encouraged to spend more time understanding the content in the module and find room for consultations where necessary at least two to three days in advance of training.

# Table of Contents

# UNIT 1   Making the teaching and learning of numbers enjoyable

**Introduction**
Teachers already know how to write, identify and count numbers. What they may need is greater skill in teaching learners these ideas. The idea of computational skills with whole numbers is a very important part of early grade numeracy and mathematics. Learners' acquisition of whole number ideas forms a basis for learning other mathematic concepts. It is therefore important that teachers make the teaching and learning of whole numbers enjoyable to ensure that learners acquire the necessary knowledge of numbers.

This unit aims at bringing real life situations that are familiar to learners into the class. It has included suggested games, stories and songs that are familiar to children to help them develop the concept of numbers. It covers work on modelling, counting and writing numbers up to 9.

**Learning outcomes**
By the end of this unit, participants should be able to:
- model numbers
- teach numbers using models
- teach how to write numbers
- teach how to count in ascending and descending order
- use songs, stories and games to teach numbers
- use real life situations to teach numbers

**Time:  3 hours (9:30 – 12:30)**
        Activities 1 & 2 – 9:30 – 10:30
        Activity 3 & 4 – 10:30 – 12:30

**Activity 1      Modelling numbers 0– 9**
1. Ask participants to be in groups and:
   a. discuss the importance of modeling numbers 0 – 9
   b. list the resources used to model numbers
   c. model numbers 0– 9
2. In plenary, demonstrate how the models can be used in the teaching and learning of numbers 0– 9
3. Consolidate the activity

## Brain bank

Modelling numbers involves demonstrating the meaning of numbers using objects.

| Importance of modelling numbers |
| :--- |
| 1. makes learning of mathematics fun and enjoyable |
| 2. adds reality to number concept ( children can learn from concrete to abstract) |
| 3. promotes understanding of mathematical concepts |

**Activity 2    Counting up to 9**

1. Ask participants to work in groups and:
    a. discuss ways of teaching the concept of counting
    b. collect locally available resources from the surroundings for the teaching of the concept of counting
    c. discuss how the locally available resources are used in teaching the concept of counting
2. In plenary, groups should demonstrate to the rest of the participants how to teach counting in ascending and descending order.
3. Consolidate ideas generated from the discussions and demonstrations.

## Brain bank

**Counting**

Teachers can use the following activities to make the teaching and learning of counting meaningful and enjoyable to learners:

*Playing games*, e.g. phada, ndado, bawo, 'sitima ikumira'

*Singing songs* e.g. pamchenga, 'mwezi uwale tisewere tiyimbe'

> One two
> How are you
>
> Three four
> Shut the door
>
> Five six
> Pick up sticks
>
> Seven eight
> Put them straight
>
> Nine ten
> Count again

**Counting in ascending and descending order**

Learners enjoy counting in ascending and descending order through the use of familiar daily life using objects such as cards with numbers, eg:

Or a palm with numbers 1 to 5 written on each finger eg:



*Page numbers for their books*.
Teachers can ask learners to identify and count page numbers of their books.

*Learners ages*
Teachers can arrange learners according to their ages in ascending or descending order.

They can also use other practical examples but making sure that they do not go beyond 9.

## Activity 3        Writing numbers up to 9

1.  Ask participants to be in groups and:
    a.  identify the resources that are commonly used when teaching writing numbers
    b.  discuss how to use the resources in teaching writing numbers to Standard 1 learners
    c.  discuss how they can use the resources when introducing writing numbers
2.  Let groups demonstrate how to introduce writing numbers
3.  Consolidate the ideas generated during demonstration

## Brain bank

**Writing numbers**

*Use learners' everyday experiences*
Teachers can ask learners to write their ages, number of children in their family, number of friends, favourite number, shoe size and number of letters in their name.

Teachers should show learners objects and ask them to write the numeral represented by the objects

Teachers can also ask learners to be in pairs. One learner can write a numeral on the back of the other using a finger. The learner who has a numeral written on his/her back should mention the numeral that the friend wrote. (It would be a good idea to start with a demonstration pair)

## Activity 4        Teaching numbers using games, songs and stories

1. Ask participants to be in groups and do the following:
    a. present a list of songs, games and stories that can be used in the teaching of numbers from 0 – 9
    b. let the groups demonstrate how the songs, games and stories can be used in the teaching and learning of numbers. (Ensure that all the unfamiliar songs/games are demonstrated)
2. Consolidate the activity.

## Brain bank

Refer to the brain bank of activity 2.

## Conclusion

In this unit participants have explored how to make the learning of number concepts enjoyable through activities such as games and songs. In addition, the teaching and learning of numbers was made meaningful through the use of real life situations.

## Self-reflection

Ask participants to reflect on how they can make the teaching and learning of numbers enjoyable in their classroom and school.

Ask the participants to write down their suggestions.

## Suggested INSET at cluster level

Ask participants to suggest issues they would like to discuss further with other teachers or school leaders in their cluster or zone.

# UNIT 2   Addition with regrouping

**Introduction**

Experience shows that learners in the lower classes face some challenges when solving problems that involve addition with regrouping. Mastery of addition of numbers with regrouping helps learners apply addition in daily life situations. A good introduction of addition of two-digit numbers which involve regrouping prepares learners to easily add larger numbers with regrouping. Teachers need to ensure that the teaching and learning of addition with regrouping is done meaningfully. This unit discusses the teaching and learning of addition with regrouping and how it can be made enjoyable to the learners.

**Learning outcomes**

By the end of this unit, participants should be able to:
- suggest ways of introducing addition with regrouping
- identify ways of making the teaching and learning of addition with regrouping meaningful and enjoyable
- discuss games and songs that can be used when teaching addition with regrouping
- describe real life situations in the teaching and learning of addition with regrouping

**Time: 3 hours (1:30 – 4:30)**

  Activities 1 & 2:  1:30 – 3:00
  Activities 3 & 4:  3:00 – 4:30

**Activity 1  Introducing addition with regrouping**
1. In groups, let participants:
    a. discuss challenges that learners face when adding numbers with regrouping
    b. suggest ways of helping learners with difficulties in adding numbers with regrouping
    c. discuss how to introduce addition with regrouping in Standards 2– 4
2. Let each group present their work and demonstrate how to introduce addition with regrouping in Standards 2– 4.
3. Consolidate the activity

## Brain bank

Regrouping involves placing numbers according to their values after an operation.

**Challenges that learners face when adding numbers with regrouping**:

 a. they forget to carry over a number from one unit to another, e.g. from ones to tens
 b. they have problems understanding the concept of carrying over
 c. they have problems understanding the concept of units such as ones, tens, etc
 d. they have problems with order of operations, e. g. beginning an operation from the left instead of the right

**Ways of helping learners**
 a. modelling addition with regrouping using place value box and/or spike abacus
 b. introducing place value units
 c. giving learners enough opportunity for practice

**Activity 2      Teaching word problems that involve addition with regrouping**

1. Ask participants to brainstorm challenges that learners face when working out word problems involving addition of numbers with regrouping

2. In groups, let participants discuss how they can help learners work out word problems such as:
   a. Mary ali ndi miyala 296. Yohane watola miyala 147. Kodi miyala yonse pamodzi ilipo yingati?
   b. Pasukulu ya Tsakala pali anyamata 387 ndi atsikana 389. Kodi ophunzira onse pamodzi alipo angati?
3 Outline steps to be followed when solving word problems involving addition with regrouping.

4 Consolidate the activity.

## Brain bank

**Challenges that learners face when solving word problems:**
a. Failure to read and understand the problem
b. Failure to arrange numbers according to their place value
c. Failure to understand mathematical language

**Activity 3    Practising teaching a lesson on addition with regrouping**

1. Ask participants to be in groups and:
   a. come up with a lesson plan on addition with regrouping
   b. identify resources and methods to be used in a lesson on addition with regrouping
2. Let each group demonstrate the lesson
3. Let participants give each other feedback on the lessons taught
4. Consolidate the activity

**Conclusion**

In this unit, participants explored the teaching and learning of addition of numbers with regrouping. Meaningful learning of addition with regrouping helps learners develop competency in addition of numbers. Participants had an opportunity to practice teaching addition with regrouping.

**Self-reflection**

Ask participants to reflect on how they can teach addition with regrouping more effectively in their classrooms.

Ask participants to write down their suggestions.

**Suggested INSET at cluster level**

Ask participants to suggest issues they would like to discuss further with other teachers or school leaders in their cluster or zone.

# UNIT 3  Making the teaching and learning of four digit numbers enjoyable

**Introduction**

As learners progress through the standards, the expectation is that they are able to write and understand the meaning of increasingly large numbers. However, it has been established that Standard 4 learners in most schools have problems in writing and using numbers between 1000 and 9999. This affects their ability to work with these numbers and to learn and use bigger numbers in the upper classes. Teachers should give learners a variety of practical activities to enable them understand the concept of numbers.

**Learning outcomes**

By the end of this unit, participants should be able to:
- model numbers
- use the models to teach numbers
- teach how to write numbers from 1000 – 9999
- teach how to count in ascending  and descending order
- use songs, stories and games to teach numbers

**Time:  3 hours (9:30-12:30)**

   Activity 1:  9:30 – 10:30
   Activity 2:  10:30 – 11:30
   Activity 3:  11:30 – 12:30

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**Note:**  For this activity, you will need  a spike abacus and a place value box.

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**Activity 1      Modelling numbers 1000 – 9999**

1.  Ask participants to be in groups and do the following:
   a.  discuss problems learners encounter when learning numbers from      1000 – 9999
   b.  discuss ways of introducing numbers from 1000 – 9999
   c.  identify resources that can be used to introduce numbers from 1000 - 9999
   d.  discuss how the spike abacus and the place value box can be used in introducing numbers from 1000 – 9999
2   Ask groups to demonstrate how the place value box and spike abacus are used in introducing numbers from 1000 – 9999.
3   Consolidate the activity.

| Brain bank |
| --- |

**Introducing numbers 1000 – 9999**

**Resources for introducing numbers 1000 – 9999**
- Place value box, sticks, pieces of strings
- Spike abacus – clay balls with holes or bottle tops with holes

**How to use a place value box**
- Have a place value box and sticks.
- Place one stick at a time in the ones compartment.
- When the sticks reach ten, make a bundle and transfer it into the tens compartment.
- Continue the process to make 10 tens and make a bundle of 10 tens and transfer it to the hundreds
- The same process goes on to get to the thousands.

**How to use a spike abacus**
- Have a spike abacus and bottle tops with holes (or clay balls with holes).
- Put one bottle top at a time into the ones spike.
- When you count ten, remove all the bottle tops and represent it with one other object to represent the bottle tops.
- Continue the process to make hundreds and thousands.

**Note:** The spike abacus is more ideal for larger numbers than the place value box.

**Problems learners face when learning numbers from 1000 – 9999**
- Failure by learners to understand that one object represents many things eg, that a bottle top in the hundreds spike represents 100.
- Failure by learners to understand the value of a number according to its position eg, that in 54, 5 represents 5 tens while in 45, 5 represents 5 ones.

**How to deal with the challenges**
- Teachers can use modelling ie, introducing numbers using objects.
- They should explain the concept of representation clearly.
- Teachers should be given an opportunity to practise modeling.

**Activity 2   Counting up – 9999**
1. Ask the participants to be in groups and to the following:
    a. list teaching and learning resources they commonly use in teaching counting from 1000 – 9999 in ascending and descending order
    b. discuss how the teaching and learning resources mentioned in 3a can be effectively used in the teaching and learning of the following:

      i.  Arranging numbers in ascending and descending order

     ii.  Filling in missing numbers in ascending and descending order

   iii.  Counting at intervals of 10s; 50s; 100s; 200s; 500s; 1000s not exceeding 9999

2. Ask groups to demonstrate how the teaching and learning resources can be used.

3. Consolidate the activity.

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## Brain bank

### Resources for teaching counting in ascending and descending order

- Number cards
- Number line

**Arranging numbers in order**

Encourage teachers to follow the following procedures:

1  Make few sticks of different lengths.

2  Put sticks in a tray starting with the shortest on the left and the tallest on the right or vice versa. When ordering by length, a given stick has to come after every shorter stick and before every longer stick.

3  Shorter sticks stand for small numbers and taller sticks stand for big numbers in a pattern.

**Missing numbers**:

1  Draw a number line on the ground with missing numbers.

2  Ask one learner at a time to jump over the number line and shout the missing numbers in the process

**Counting numbers in 50s, 100s, 200s, etc**

Using games such as 'fish fish', teachers can ask learners to count at intervals of 10s; 50s; 100s; etc

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**Activity 3  Writing numbers from 1000 – 9999**

1. Ask participants to work in groups and do the following:

   a    discuss challenges learners face when learning writing numbers from 1000 – 9999

   b    discuss how they can help learners overcome these problems

   c    let groups discuss how they can teach learners how to write numbers

2. Let participants share their group ideas with the rest of the participants.

3. Consolidate the activity.

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## Brain bank

**Problems learners face when writing numbers**

In your discussion, consider the following:

a. Misplacing value of numbers, eg writing 8569 as 8659
b. Including a zero in a number, eg writing 2220 as 2022
c. Failure to recognise the number of digits in numbers between 1000 and 9999
d. Excluding a zero in a number, eg writing 1009 as 19

**Suggested solutions for overcoming challenges learners face in learning numbers** between 1000 and 9999.

Encourage teachers to:

- emphasise that numbers in thousands have four digits
- demonstrate how to write the numbers
- give learners practice

### Activity 4  Teaching numbers using games/songs/stories

1. In groups discuss how the games, stories and songs can be used to teach the idea of numbers from 1000 – 9999
2. Ask each group to select one song/game/story and demonstrate how it can be used to teach the idea of numbers from 1000 – 9999
3. Review and consolidate ideas generated from the discussions and the demonstrations

## Brain bank

**Teaching numbers using games/songs**

Draw a number line on the ground with missing numbers. Learners should jump over the number line and shout the missing numbers in the process

Let learners play game that involves jumping over the rope while counting in hundreds/thousands up to 9000

Learners may also play the following games: Zunguli-zunguli zankiya', auction game, fish-fish

## Conclusion

In this unit, participants have learned how the learning of number concepts can be made enjoyable. This can be done through incorporating games, songs and stories. Modeling of four digit numbers has been presented by the use of place value boxes, sticks, spike abacuses and other resources.

### Self reflection

Having gone through this unit, participants should reflect on and record how they will teach modelling, recognition and writing of numbers more effectively in their classrooms. They should also reflect on how they can teach numbers from 1000 to 9999 using real life situations.

**Suggested INSET at cluster level**

Ask participants to suggest issues they would like to discuss further with other teachers or school leaders in their cluster or zone.

# UNIT 4   Subtraction with regrouping

**Introduction**

Experience shows that learners in the lower classes face some challenges when solving problems that involve subtraction with regrouping. Mastery of subtraction of numbers with regrouping helps learners apply subtraction in daily life situations. A good introduction of subtraction of two-digit numbers which involve regrouping prepares learners to easily subtract larger numbers with regrouping. Teachers need to ensure that the teaching and learning of subtraction with regrouping is done meaningfully. This unit discusses the teaching and learning of subtraction with regrouping and how it can be made meaningful and enjoyable to the learners.

**Learning outcomes**

By the end of this unit, participants should be able to:

- suggest ways of introducing subtraction with regrouping
- identify ways of making the teaching and learning of subtraction with regrouping meaningful and enjoyable
- describe real life situations in the teaching and learning of subtraction with regrouping

**Time:  3 hours (1:30 – 4:30)**

       Activities 1 & 2:  1:30 – 3:00

       Activities 3 & 4:  3:00 – 4:30

**Activity 1      Introducing subtraction with regrouping**

4.  Ask participants to be in groups and do the following:
    a.  discuss challenges that learners face when subtracting numbers with regrouping
    b.  suggest ways of helping learners with difficulties in subtracting numbers with regrouping
    c.  discuss how to introduce subtraction with regrouping in Standards 3 and 4
5.  Let each group present their work and demonstrate how to introduce subtraction with regrouping in Standards 3 and 4.
6.  Consolidate the activity.

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**Brain bank**

Regrouping involves placing numbers according to their values after an operation.

**Challenges that learners face when subtracting numbers with regrouping**

a.  They forget to regroup from higher to lower unit, eg from tens to ones
b.  They have problems understanding the concept of regrouping from higher to lower units
c.  They have problems understanding the concept of units such as ones, tens, etc

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d. They have problems with order of operations, eg beginning an operation from the left instead of the right

**Ways of helping learners**
a. Modelling subtraction with regrouping using place value box and/or spike abacus
b. Introducing place value units
c. Give learners enough opportunity for practice.

**Activity 2 Teaching word problems that involve subtraction with regrouping**
3. Ask participants to brainstorm the challenges that learners face when working out word problems involving subtraction of numbers with regrouping.
4. Ask participants to be in groups and do the following:
   1. discuss how they can help learners work out word problems such as:
      i. pasukulu panali madesiki 360. Madesiki 142 athyoka. Kodi madesiki abwino otsala ndi angati?
      ii. ophunzira abzala mbande za mitengo 832. Mitengo yomwe yamera ndi 519. Kodi mbande zomwe sizinamere ndi zingati?
   2. outline steps to be followed when solving word problems involving subtraction with regrouping.
5. Consolidate the activity.

**Brain bank**

**Challenges that learners face when solving word problems**
- Failure to read and understand the problem
- Failure to arrange numbers according to their place value
- Failure to understand mathematical language, e.g. By how much is 100 greater than 59?

**Points to emphasise**
Teachers should help learners:
a. Read and understand a problem.
b. Use the appropriate resources when solving word problems, e.g. place value box.
c. Understand the mathematical language.

**Activity 3 Practicing teaching a lesson on subtraction with regrouping**
1. Ask participants to be in groups, and:
   a. come up with a lesson plan on subtraction with regrouping
   b. identify resources and methods to be used in teaching the lesson on subtraction with regrouping

2   Let each group demonstrate how to teach subtraction with regrouping.

3   Let participants comment on each of the demonstration lessons.

4   Consolidate the activity.

**Conclusion**

In this unit, participants explored the teaching and learning of subtraction of numbers with regrouping. Meaningful learning of subtraction with regrouping helps learners develop competency in subtraction of numbers. Participants had an opportunity to practice teaching subtraction with regrouping.

**Self-reflection**

Ask participants to reflect on how they can teach subtraction with regrouping more effectively in their classrooms.

Ask participants to write down their suggestions.

# Suggested INSET at cluster level

Ask participants to suggest issues they would like to discuss further with other teachers or school leaders in their cluster or zone.

# Concept Reinforcement Activities

## Facilitating counting

**What does this activity accomplish?**
- This activity is a way to help learners learn to count backwards
- Through this activity learners have the opportunity to work as a class to practice counting and counting backwards.

**Classroom Set Up:**
Learners should be arranged in a half circle.
The teacher should be facing the half circle of learners.

**Activity:**
1. The class begins by counting together how many people there are in the half circle.
2. Each learner then numbers off starting on one end so that each person is responsible for a number from 1 up to the number of people in the class.
3. Starting with number one each person says their number in numerical order.
4. After the last person has said their number, they begin the new chain, but this time it will travel from their end back to 1. Learners will get a chance to hear the numbers counting backwards, but will only have to remember their own number.
5. Repeat the same sequence again, but this time when counting backwards after each learner says their number..
6. The final time through the whole class should count up from one, and then together try to count backwards from the high end back to 1.

**Variations:**
A. The class could be split into two smaller groups at first
B. As an extra challenge the counting could be done in twos instead of singles as follows: 2, 4, 6, 8, . . . .

# Number Recognition

**What does this activity accomplish?**

- This activity is a fun way to introduce learners to numbers
- Through this activity learners will learn to recognize and order basic numbers

**Classroom set up:**

Each learner or group needs to have ten bottle caps.

Learners should be seated (they can be either alone or in groups depending on the number of objects available) with the objects in front of them.

The teacher can be at any location in the room from which she/he can be heard.

**Activity:**

1. The teacher holds up a card with a number 1 – 10 written on it. The learners need to correctly line up that number of bottle caps.
2. The numbers can be shown in the correct order and then out of order to increase difficulty.

**Variations:**

A. If there are no bottle caps or other materials available learners can be put in groups, one learner is asked to arrange fellow learners in a line according to the number on the card.
B. Learners can also stamp their feet according to the number shown.
C. The teacher can also vocally call out a number and show the card after the caps/learners have been arranged.

# Number Patterns

**What does this activity accomplish?**
- Teaches learners to identify number patterns
- Improves number pattern recognition and related thinking skills

**Classroom set up:**
Learners should be seated.
The teacher can be at any location in the room from which she/he can be heard.

**Activity:**
1. The teacher writes a number pattern on the board, for example:
   a. 4, 6, 8
   b. 5, 10, 15
   c. 22, 25, 28
   d. 88, 77, 66
   e. 100, 89, 78
   f. 100, 99, 97, 94
2. The learners are asked to identify the next number and the pattern being used.
3. Learners should explain how they determined the next number in the pattern.

**Variations:**
1. Learners generate the number patterns.
2. Work is done is small groups, while being monitored by the teacher.
3. The pattern is presented verbally.
4. The pattern uses negative numbers.

# Adding by Tens

**What does this activity accomplish?**
- Helps learners to understand place value.
- Gives learners practice counting by tens.

**Classroom set up:**
Learners should be seated.
The teacher can be at any location in the room from which she/he can be heard.

**Activity:**
1. Starting at one end of the room learners should count by tens starting at zero.
2. Learners should see how high they can count before a number is missed.
3. Once a number is missed the next learner should start over at zero.

**Variations:**
A. Learners can work in pairs or small groups to alternate counting by tens.
B. A small object can be passed or tossed between learners for each addition they get correct.

# Oh Numbers Where Are You?

**What does this activity accomplish?**
- Teaches learners basic addition.
- Teaches learners to identify equations.

**Classroom set up:**

Learners should be standing around the room.

The teacher will move about the room as necessary.

**Activity:**

1. The teacher assigns each learner a number.
2. The learners must go around the room to identify which two learner's numbers (or addends) equal the number you gave them.

**Variations:**

A. This game could be played with subtraction or multiplication as well.

# Basic Addition and Subtraction

**What does this activity accomplish?**
- Teaches learners the principles of addition and subtraction
- Allows learners to visually see the outcomes of simple addition problems
- Allows learners to visually see the outcome of simple subtraction problems

**Classroom set up:**

Learners should work individually or in groups to solve the addition subtraction problems. Learners (or groups) should have a group of similar objects in front of them (i.e. bottle caps, stones, or banana leaves).

The teacher can be at any location in the room from which she/he can be heard.

**Activity:**
1. Each learner or group should write the + and = signs in their workspace (such as on a stone with a wet finger). The teacher provides a basic math problem such as 1 + 2. The learners are instructed to use the objects to solve the problem use the math symbols written in their work space.
2. The teacher can make the problems increasingly more challenging by using larger numbers.
3. Each learner or group of learners should write – and = signs in their workspace
4. The learners can then be asked to subtract numbers to work backwards through the problem.

**Variations:**
A. Learners can use a wet finger on a stone if there are no objects available.
B. One learner can write a basic equation on another learner's back. The learner being written on must try to identify the equation as well as the correct answer.

# Addition with 4 digits

**What does this activity accomplish?**
- Challenges learners to create addition problems
- Provides practice in addition of single and double digit numbers
- Problem solving
- Critical thinking

**Classroom set up:**
Create groups of up to 6 learners.
The teacher can be at any location in the room from which she/he can be heard.

**Activity:**
1. Write four single digit numbers where learners can see them. (for example: 6, 2, 5, 9)
2. Ask the groups to create as many addition problems as they can with the numbers you have written. The sum of each problem should be unique.
3. Allow the groups to work on creating and solving their problems.
4. Ask the groups to report on the number of unique problems they created. Have them demonstrate the problems and their solutions to the other learners.

**Variations:**
A. More or fewer digits could be used.
B. Learners could be required to add only double digit numbers.
C. The problems could be subtraction or multiplication.
D. You could challenge learners to create problems with sums greater than 100, or less than 100.

# Basic Patterns

**What does this activity accomplish?**

- Teaches learners basic pattern recognition

**Classroom set up:**

Learners should be seated either individually or in groups.

The teacher can be at any location in the room from which she/he can be seen and heard.

**Activity:**

1. Using any objects available (such as stones, banana leaves, or bottle caps) the teacher should create a pattern. For example, two rocks, then a banana leaf then two rocks.
2. The learners must identify which object comes next in the pattern.

**Variations:**

A. Learners can work in small groups to create and identify patterns.

One learner can come to the front of the class to create a pattern for the other learners to identify.

# Word Problems

**What does this activity accomplish?**
- Helps learners practice division using mental math.

**Classroom set up:**
Learners should be seated either individually or in groups.
The teacher should be wherever she or he can best be heard.

**Activity:**
1. The teacher reads a short word problem that involves division. For example:

   Will is helping his father at the family store. He has been asked to bring his 24 pencils from the back room. Each box holds 4 pencils. How many boxes does he need to get?

2. The learners work individually or in groups to calculate the correct answer.
3. Learners can be challenged to see how quickly they can calculate the answer.

**Variations:**
A. The word problems can contain any form of math operation.
B. Some word problems should contain numbers that are not needed to solve the problem.

   For example:

   Will is one of 4 boys in his family. Today he is helping his father at the family store. Will has been asked to bring his 24 pencils from the back room. Each box holds 4 pencils. How many boxes does he need to get?

# Rounding (to the nearest ten)

**What does this activity accomplish?**
1. Increases learners' awareness of number order and whole numbers
2. Builds learners' rounding skills

**Classroom set up:**
A number line from 0 to at least 50 should be displayed to the class.
Learners should be seated.
The teacher should be situated near the number line.

**Activity:**
A. Explain that "rounding" mean moving to the nearest multiple of a number. Usually a multiple of 10, 100, 1000, etc.
B. Using a number line that is taped or painted to the wall, or written on a chalk board, demonstrate rounding to the nearest ten. Be sure to illustrate that a number can be rounded up or down.
   1. Point to the number 6 and ask the learners if the number is closer to 0 or 10.
   2. Repeat the activity with the number 17. Then repeat it again with the number 22.
   3. In each example explain that you are "rounding" the number to the nearest multiple of 10. Rounding mean moving to the nearest multiple of a number. Usually a multiple of 10, 100, 1000, etc.
C. With the number line in full view of the learners, call out a number and ask the learners to give the nearest ten. Repeat this step until the class appears to understand the concept and demonstrates skill in rounding to the nearest number.

**Variations:**
- Learners can work in groups rotating which learner provides the number to be rounded.
- Learners can begin standing and sit down when they provide an incorrect answer. The final learner standing "wins".
- Learners should face away from the number line so that they must complete the rounding without its support.
- Ask learners to round to other numbers – 5s, 25s, 100s, etc.

# Notes

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